THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES.

JUNE, 1911.

ORIGINAL ARTICLES.

MYOMA OF THE UTERUS, WITH SPECIAL REFERENCE TO DEGENERATIVE CHANGES.[1]

By John B. Deaver, M.D., LL.D.,
SURGEON IN CHIEF TO THE GERMAN HOSPITAL.

WITH AN ANALYSIS OF CASES.

By D. B. Pfeiffer, M. D.,
ASSISTANT PATHOLOGIST AND SURGEON TO THE OUT-PATIENT DEPARTMENT OF THE GERMAN HOSPITAL, PHILADELPHIA.

It has always been my contention that a woman who possesses a fibroid tumor that is symptomless and discovered only by accident displays good surgical judgment if she refuses to submit to its removal. This opinion has received support from most well-considered contributions to the subject. In the admirable work on "Myomata of the Uterus," recently issued by Kelly and Cullen, the autopsy records of the Johns Hopkins Hospital have been reviewed with reference to the general frequency of myomatous tumors. It was found that of 742 women over twenty years of age, dying from general causes, myomatous growths of the uterus were present in 148, or about 20 per cent. From this and similar statistics it is apparent that the incidence of fibroids is much greater than is the incidence of troubles caused by them.

Granted that the mere presence of a demonstrable fibroid is not in itself an indication for operation, we are confronted with the task of assigning the proper indications. Leaving aside the general condition of the individual patient, which is a constant factor for consideration in all surgical procedures, our decision must be compounded of three factors, viz.: The mortality from the operation itself, the urgency of the immediate symptoms, and the prognosis of the disease if unchecked by active intervention. As for the first consideration, we find that the mortality of operations in this class of cases as they now come to us is in the best hands from 1 to 3 per cent. In the hands of unskilled or occasional operators it is necessarily somewhat higher. This mortality, while not large, is sufficient to make us cautious in the selection of cases. In all but ultra-conservative quarters it is not sufficient to cause delay of operation in such cases as severe sudden hemorrhage, or smaller hemorrhages so frequently repeated as to bring the patient into a condition of grave anemia, nor in the case of extrusion of the tumor or strangulation by twist of a pedunculated growth. Impaction of the growth in the pelvis also may cause such severe symptoms as to defy mere palliative measures, and when sepsis is implanted upon a myomatous condition of the uterus it assuredly requires the aid of operation. Other and rarer complications may make operation the wiser course, but all these are conditions which are announced to both patient and physician in unmistakable terms, and our best physicians who combine boldness and prudence will not be long in arriving at a conclusion as to the need for operation, nor will they shirk their duty in advising it.

---

[1] Read at a meeting of the American Association of Obstetricians and Gynecologists, Syracuse, N. Y., September 22, 1910.

The day is past when surgical treatment must justify its plea for preference in these cases, even though there is still a disinclination among some to follow the plain indications. The cause of this disinclination is not in the case, but in the man himself. I venture to predict that there will never be devised for any ill or disorder so perfect a treatment that it will receive the unanimous assent and support of the body of physicians. Indicision and minds that work on the bias will always be with us, as in every other calling or vocation. I will not, therefore, take up time in trying to convert those who deny the means of salvation, and will rather devote myself to an examination of the third factor in decision, namely, the prognosis of fibroid disease of the uterus in so far as it relates to the behavior of the tumors themselves, or to pathological conditions caused by their presence. This is a most important question. To anticipate dangers before they arrive and to devise means of warding them off is to approach the ideal in medicine and surgery as well. However skilful a physician may be in the presence of actual danger he is not exercising his highest function unless he is so armed with a knowledge of the probable developments of disease as to enable him often to steer his patients away from the rocks. This is the art of prognostics which Hippocrates never ceased to praise, calling it even Godlike, probably because it represented the nearest approach to the divine knowledge of the future which could be possessed by man. This is at the bottom of the great movements in preventive medicine, and to a certain extent has been adopted in surgery. Thus, the removal of a chronically diseased appendix is a high development of prognostics, and comes from our knowledge, painfully acquired, of the relative risks of such a condition as compared to operation.

An effort has been made to place myomatous disease of the uterus among the conditions which demand a preventive operation because of the probability of malignant degeneration of these tumors themselves or of associated tissues.

For consideration we may divide these pathological changes into: (1) Degenerations of the fibroids themselves, which may be either (*a*) non-malignant or (*b*) malignant; (2) malignant disease of the body or the cervix of the uterus associated with a fibroid condition of that organ.

My last 345 consecutive operations for myoma of the uterus have been analyzed chiefly with reference to this point; 250 cases immediately preceding those upon which this paper is based were made the subject chiefly of a clinical analysis. As the pathological data of this series were found to be less complete than in the present series, they have been disregarded since we felt that the smaller number of cases would give the truer picture from a pathological standpoint.

Hyaline degeneration is the most frequent of the benign regressive changes affecting fibroids. It has been noted as present in a marked degree in 37 cases, or about 11 per cent. This does not represent the true incidence of the condition, since early hyaline change was not specially noted. Practically all fibroids which attain any size will show this condition in some part of the growth. It is chiefly of pathological interest, and possesses no clinical significance until it goes on to the stage of liquefaction and cyst formation. When this occurs the tumors often take on rapid increase in size, and symptoms are usually augmented in proportion. The product of this melting process is a material which varies from a gelatinous consistency to a thin, watery fluid. Tumors filled with the gelatinous material are often said to have undergone myxomatous degeneration, while those in which the thinning process has gone on to the production of watery fluid are termed cystic. In some series both conditions are together recorded as cyst formation. In our series we found nine instances of myxomatous change and 3 pronouncedly cystic, 12 in all (3.6 per cent.). This corresponds rather closely with Noble's figures in his extensive collection of 2274 cases of fibroids, in which he found approximately 2.6 per cent. of cystic changes. This condition, when it arises, demands operative treatment. Cullen reports a case in which the tumor weighed eighty-nine pounds and was mistaken for an ovarian cyst. It is chiefly those cases when one is dealing with a single soft symmetrical tumor of moderate size that are so difficult to distinguish from pregnancy. The simulation may be perfect and the distinction impossible even with the abdomen open.

These changes are probably due to slowly failing nutrition of the growth. When the nutriment is more suddenly cut off, the tumor undergoes necrosis. If this occurs in such a way that extravasation of blood takes place into the tissues, the tumor presents a peculiar brick-red color, which has caused it to be called red necrosis. If blood is not present in excess the tissue elements simply lose their definition and show the ordinary picture of coagulation necrosis.

Usually necrosis affects only a limited portion of the tumor and gives rise to no symptoms. In some cases, however, the growth may perish en masse, and this is generally accompanied by more or less severe symptoms. This extensive necrosis is most apt to affect pedunculated myomas where the mechanism is usually apparent, being due to strangulation of the blood supply or infection. Occasionally, however, an intramural fibroid will undergo sudden necrosis, without obvious reason. This is more apt to occur during pregnancy. Necrosis of this sort is a serious condition, chiefly because of the danger of secondary infection. A necrotic fibroid which projects into the cavity of the uterus or possibly from the cervical canal always becomes infected, and it is important not to mistake the foul sloughing mass for an inoperable carcinoma. Christopher Martin found necrosis occurring in fibroids in about 4 per cent. of cases considered. Noble found it in 119 cases (5 per cent.). In our series it occurred twelve times, or 3.6 per cent. It does not materially increase the danger of an operation unless it be already accompanied by infection.

In sudden necrosis of an entire tumor, one finds usually definite symptoms pointing toward interference, such as pain, vomiting, rapid increase in size of the tumor, tenderness, and often some fever. When necrosis takes place in successive small areas it is followed by a deposition of calcium salts, which gives rise to the so-called calcareous degeneration. This we found eight times (2.4 per cent.). It is practically a spontaneous termination of the life of the tumor, and is rather to be welcomed than otherwise.

If we add together all noteworthy benign degenerations occurring in this series we have a total of 30, or 9.6 per cent. This is not to be interpreted to mean that approximately 10 per cent. of all fibroids will show such degenerative changes, but that of a series of cases which are considered under present standards to require operation, about 10 per cent. are causing trouble largely as a result of degenerative changes which have occurred in them.

Malignant degeneration of fibroids is a matter of much greater importance if it be proved to be of frequent occurrence. The only malignant change which a fibroid itself can undergo is, of course, transformation into a sarcoma. Martin in his recent paper concludes that this occurs in approximately 4 per cent. of all cases. He quotes statistics as follows: Winter found sarcomatous change in 4 per cent. of 500 myomas; Martin found 6 in 205 cases; Cullingworth, 1 in 100; Scharlieb, 6 in 100; Haultain, 2 in 120; Hirst, 3 in 189; McDowell, 20 in 1000 cases. He, himself, encountered 9 cases in 380 abdominal sections for myoma. These collectively total about 2 per cent. of sarcoma presumably arising upon a myomatous base. He goes on to say that "probably many other cases thought to be primary sarcomata have originated in unrecognized myomata," and from this assumption justified himself in raising the true proportion to 4 per cent. Bland-Sutton, however, has taken a directly opposite view, and states that quite possibly sarcomas which have been considered as derived from preceding myomas have been sarcomatous from the beginning. Noble, in his large tabulation, found only 34 cases of sarcoma, or about 1.5 per cent. It is not stated that these cases were all instances of sarcomatous degeneration of myomas, and it is quite likely that some at least were mere associations. Kelly and Cullen found sarcomatous degenerations or association in 17 out of 1400 cases (1.2 per cent.). In our series we found 4 cases, 1.2 per cent., which were diagnosticated pathologically as sarcoma.

In the first case the tumor, which was a small round-celled sarcoma, gave no evidence of its being derived from a myoma. The second case was a myxosarcoma which also showed no evident connection with an antecedent, myomatous condition. It seemed rather probable that such was not the case. The third case involved the ovary, and it is difficult to see what possible connection the fibroid condition of the uterus could have had in the origin of such a different condition. In the fourth case the sarcoma was in no way connected with the uterus. Clinically there was nothing to suggest such a malignant change, and the patient has remained without recurrence. In this case the patient was operated on primarily for a huge ovarian cyst, and the uterus found after section to be the seat of numerous fibroid nodules. The condition had been present for years, and the tissues were very atypical in appearance. Under such conditions only those who are skilled in microscopic work know how difficult it may be to set the exact boundary between a malignant and a non-malignant change. The personal equation of the pathologist must be taken into account in such cases. It is only thus that I can account for the high percentage of sarcomatous changes found by some authors who counsel minute microscopic examination of various parts of all the tumors present. I am aware that it is by no means impossible for such a transformation to take place, but I cannot believe that this tendency is so marked as is stated by some authors. If it were true, then sarcoma of the uterus ought to be one of the most frequent of diseases, whereas it is comparatively rare. Simply to make use of the figures already given, taking 20 per cent. as the absolute incidence of myoma of the uterus in women over twenty, if 4 per cent. be the tendency of myoma toward sarcomatous change we should find sarcoma in 4 per cent. of 20 per cent. of all women, or 8 per cent., which is a reductio ad absurdum. I do not desire to cast discredit upon the findings of anyone, but I must point out that either the experience of those who find such marked proportions of sarcoma must be exceptional or else that there is a subtle source of error in the standards of diagnosis. I may state that for years every fibroid uterus which I have removed has been subjected to careful gross and microscopic examination in our laboratory at the German Hospital.

Another point which is urged for the preventive removal of fibroids is the increased tendency to uterine cancer found in myomatous uteri. That this is a real danger cannot be denied. The present series of cases shows 11 instances of carcinoma associated with myoma (3.1 per cent.). Of these, 6 (1.7 per cent.) involved the body, and 5 (1.4 per cent.) were situated in the cervix. These figures agree very closely with Kelly and Cullen, who found in 1400 cases of myoma 43 of associated carcinoma (3 per cent.), of which, 25 (1.7 per cent.) were in the body and 18 (1.3 per cent.) in the cervix. Martin found 6 cases of carcinoma in 380 (1.6 per cent.), while Noble, in his large collection, found 2.8 per cent. of carcinoma, and among his personal cases 4 per cent.

This is an alarming incidence of a desperate condition with one which is relatively innocent, and if we are able to incriminate myoma in the causation of cancer it will be a heavy stigma. The instances of cervical carcinoma can hardly be credited to the presence of myomata in the body of the uterus. Not only is it difficult to imagine any way in which a fibroid should exercise such a malign influence upon the cervical epithelium, but clinically we gain no impression that such is the case. Bearing in mind that the uterus is the most common site of carcinoma, as established by the large statistics of Welch, who found that cancer of the uterus furnished 29.5 per cent. of 31,482 cases of primary cancer, we must be prepared to find it associated with such a frequent pathological condition as myoma, which furnished at least a tenth of all gynecological work.

This association should cause no more remark than the simultaneous presence of carcinoma of the breast, stomach, bladder, or rectum, all of which have been noted in a number of instances.

Concerning carcinoma of the fundus, the case is different. If the presence of myoma does not influence the development of malignancy in the uterine epithelium, we should expect that the ratio of cervical to corporeal cancer would remain unaltered. This ratio is estimated at from 4 to 1 (Cullen) to 10 to 1 (Martin). My own statistics are more nearly in accord with the lower ratio, but in any case there can be no doubt that cervical cancer predominates largely over that which is primary in the body of the uterus.

Now, of the cancers which are found complicating a fibroid condition of the uterus, we may see by a glance at the above figures that the preponderance is reversed and fundal cancer is found to be more frequent than that of the cervix. It seems a fair assumption, and one which is also suggested by the known tendency of chronic nutritional and irritative influences to excite malignant change, that a well-defined number of cases of cancer of the body are precipitated by the presence of myomata. This, to my mind, is the most serious of the degenerative processes set in motion by a fibroid tumor, since it always arises insidiously, as do all cancers of the fundus. Sarcoma is no less insidious, though less common as a derivative of myoma. Together they constitute a menace to life of no mean degree, and though the results of observation and analysis of this series of tumors do not support the pessimistic views of some gynecologists, the danger of malignant changes due to myomata is a fact which cannot be disregarded. The early operation for fibroids does not rest upon this factor alone, and high statistics of degeneration are not needed to support it. "A good cause can sustain itself upon a temperate dispute." The only point in which I would differ from those who believe in the higher percentage of malignant change is in not advocating the removal of an accidentally discovered fibroid that is giving no symptoms. This is not a large class of cases, and therefore not a very important difference. Any tumor that begins to give trouble or atypical symptoms, even if only an irregular discharge, I believe should be removed. The tendency toward malignant degeneration gives me one of the elements of my belief. The remainder are furnished by the greater frequency of troublesome non-malignant degeneration, the likelihood of hemorrhage and chronic anemia with cardiac and vascular disturbances, the frequency of pain and more or less dangerous pressure effects upon the urinary tract, the intestines, and surrounding organs, the proved failure of fibroids to cease from troubling with the menopause, and the certainty that in a large percentage of cases delay merely means operation later under less favorable conditions.